

AD-R172 597

THE UNKNOWN HERO IN THE FAMILY OF GUIDED MISSILES(U)
FOREIGN TECHNOLOGY DIV WRIGHT-PATTERSON AFB OH J GUOLI
10 SEP 86FTD-ID(RS)T-8742-86

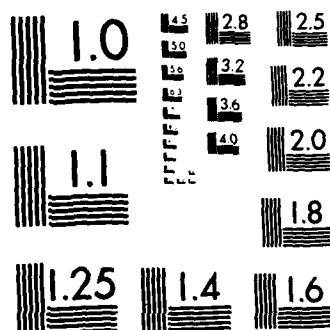
171

UNCLASSIFIED

F/G 5/9

NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

2

AD-A172 597

FTD-ID(RS)T-0742-86

FOREIGN TECHNOLOGY DIVISION

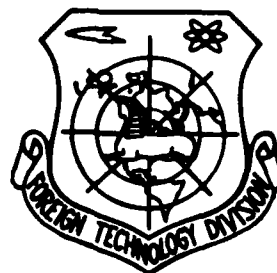


THE UNKNOWN HERO IN THE FAMILY OF GUIDED MISSILES

by

Jiao Guoli

DTIC
ELECTE
OCT 7 1986
B



DTIC FILE COPY

Approved for public release;
Distribution unlimited.



86 10 24

HUMAN TRANSLATION

FTD-ID(RS)T-0742-86

10 September 1986

MICROFICHE NR: FTD-86-C-002194

THE UNKNOWN HERO IN THE FAMILY OF GUIDED MISSILES

By: Jiao Guoli

English pages: 8

Source: Bingqi Zhishi, Nr. 1, January 1986, pp. 24-25

Country of origin: China

Translated by: FLS, INC.

F33657-85-D-2079

Requester: FTD/SDNW

Approved for public release; Distribution unlimited.

THIS TRANSLATION IS A RENDITION OF THE ORIGINAL FOREIGN TEXT WITHOUT ANY ANALYTICAL OR EDITORIAL COMMENT. STATEMENTS OR THEORIES ADVOCATED OR IMPLIED ARE THOSE OF THE SOURCE AND DO NOT NECESSARILY REFLECT THE POSITION OR OPINION OF THE FOREIGN TECHNOLOGY DIVISION.

PREPARED BY:

TRANSLATION DIVISION
FOREIGN TECHNOLOGY DIVISION
WPAFB, OHIO.

GRAPHICS DISCLAIMER

All figures, graphics, tables, equations, etc. merged into this translation were extracted from the best quality copy available.



Accepted	
Not	
Defect	
Used	
Not	
For	
Dist	
A-1	

THE UNKNOWN HERO IN THE FAMILY OF GUIDED MISSILES

Jiao Guoli

On June 9, 1982, in the sky of Bekka Valley in Lebanon where engines roared, shells flew everywhere, smoke bellowed, a fierce dog fight was in the process. In less than a minute, a Syrian plane tumbled from the sky trailed by heavy smoke. Shortly after, another Syrian plane exploded in mid-air. After the fighting ended, the Syrian Air Force found out that they had lost two dozen or so planes in this air battle. Especially surprising was the fact that these downed planes were all hit by "Sidewinder" air-to-air guided missiles. Obviously, launching interception guided missiles has become the primary tactic in air battles.

However, how to properly use an air-to-air guided missile is not an easy matter. The pilot must master "interception timing", "launch timing", "guided missile release", etc. procedures. An air-to-air guided missile costs tens of thousands of dollars. It is impossible to use real missiles during normal training. Then how can a pilot be trained to use guided missiles properly?

With this question in mind, I came to the weaponry training and research group of a certain aeronautical academy. Instructor Du greeted me warmly and invited me to have a seat after learning the purpose of my visit.

"Instructor Du, soldiers in the ranks wrote to our editor's department and asked. "There are blank shells for rifles; are there training air-to-air guided missiles loaded on an airplane? Do pilots fire real missiles in training? Could you comment on this question?" I opened with this question right after I sat down.

"This is an interesting question." Instructor Du smiled, "There are of course training air-to-air guided missiles, and they are an indispensable member in the family of guided missiles. Normally, training missiles are used to train pilots. The training missiles are very convenient to use and are rather effective."

"There is a kind of blank shell for a rifle which, when loaded and fired, produces neither noise nor bullet. Is the training guided missile this way, too?" I asked again.

"Training guided missiles are not at all like those for rifles. To launch a training missile is exactly like launching a real missile, and the pilot cannot tell any difference from launching a real missile. The training guided missile can accurately record the pilot's maneuver sequences during launching in order to evaluate whether the pilot's launching maneuvers are correct. The training missile is like a true recorder. It's fascinating!" Instructor Du said appraisingly.

I really wanted to see what a training missile looked like,
"Instructor Du, may I take a look at a training missile?"

"Well, certainly." Instructor Du took me to the aeronautical
weaponry laboratory where there were various cannons, bombs and
rockets.

"This is a training air-to-air guided missile and that is a real
missile. In order to easily distinguish them, we painted the outside
of the training missile with a layer of white coating." Honestly,
if the Instructor had not pointed it out, I would have thought these
two missiles were identical. I hurriedly drew a profile of it.
Instructor Du marked the location of five cells on my drawing and told
me that the first cell was the guidance tip, the second cell contained
a stable voltage power source and an electric clock, the third cell
contained an audio signal amplifier and automatic recorder, the fourth
cell was the simulated detonator and the fifth cell was the simulated
motor.



Fig. 1. In flight armed with a missile.

"Is there any difference between the cells of a training missile
and those of a real missile?"

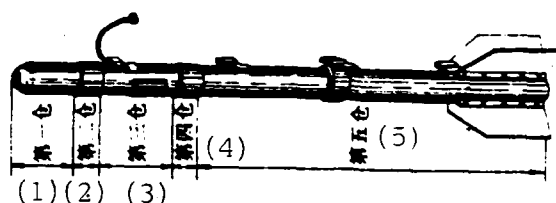


Fig. 2. Training guided missile

Key: (1) First cell; (2) Second cell; (3) Third cell; (4) Fourth cell; (5) Fifth cell.

"There is very large difference. Since the training missile is not actually launched, the infra-red detonator and motor are substituted with simulation components. The rudder module in the second cell is replaced with a stable voltage power source and electric clock. The combat section in the third cell is replaced with an audio signal amplifier and automatic recorder. Only the guided missile warhead is the same as that of a real missile", Instructor Du explained to me patiently.

Instructor Du also told me that the warhead is like the "eye" of the guided missile, and it is composed of the target finder and certain electronic components. The target finder is used to receive the infra-red signals irradiated from the enemy plane, then, through the electronic components, the signals are transformed into electric pulse signals.

"The electric pulse signals are transmitted to the second cell, right?" I ventured.

"Yes. In a real missile, these electric pulse signals are fed into the rudder module to control flight direction of the guided missile. In the training missile, the electric pulse signals are transmitted to the electric clock in the second cell and the amplifier and automatic recorder in the third cell."

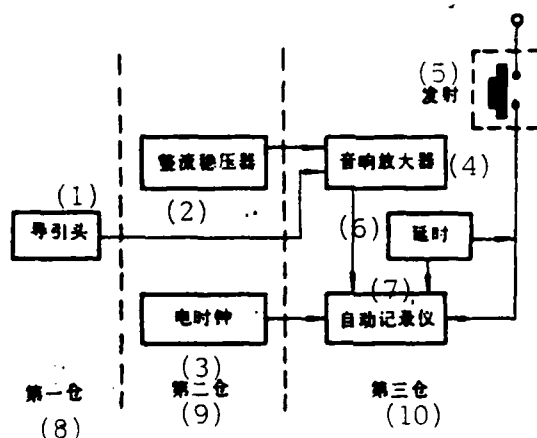


Fig. 3. Schematic diagram of the relationship between each cell of a training missile.

Key: (1) guidance tip; (2) voltage stabilizer; (3) electric clock; (4) audio amplifier; (5) launch; (6) delay; (7) automatic recorder; (8) First cell; (9) Second cell; (10) Third cell.

"Instructor Du, would you let me launch a training missile?"
I would like to try, but I was really afraid to put Instructor Du on the spot.

"Sure." I did not expect such a straightforward answer from Instructor Du. "You are working to popularize weaponry knowledge, and we should support this effort."

With curiosity, I climbed into the cockpit of an airplane. In fact, this airplane was not a real airplane either. It was just a simulation device of an airplane cockpit. Very soon I spotted an

"enemy plane", and immediately I used the light circle on the target sight to tightly lock on the target. Then I heard a "Wa, wa, wa" noise coming from my earphone. Instructor Du had told me that this noise was the audio signal transmitted by the guidance tip indicating the interception of the target. I pressed the launch button immediately, the guided missile was "released" from the airplane and sped toward its target. I "piloted" the airplane out of the attack maneuver.

"Instructor Du, were my control maneuvers correct?" It was really hard to believe that even I could launch an air-to-air guided missile.

"The proceedings of your launching of the guided missile are recorded on the recording sheet." As he talked, he pulled a recording sheet from the recorder of the training missile. On the sheet were four curves designating time, launch, release and interception. "When evaluating launch results, these four curves should be analyzed jointly. When the release curve goes up, it indicates that the guided missile is in a condition where it can be released any time. When the curve goes down, it indicates the beginning of releasing the guided missile. The curve returns to the original level after the guided missile is released. Similarly, when the interception curve goes up, it indicates that the guided missile has intercepted the target. After the guided missile is launched, the curve goes down and returns to its original level. When the launch button is pressed, the launch curve goes up. When the button is released, the launch curve goes down to its original level." He looked at the curves and said: "Your

launch maneuvers were not quite correct. You see, the launch curve did not reach the required position indicating that you launched too early." He then consoled me: "Nonetheless, it is quite remarkable to reach such a level for a person like you who is launching a guided missile for the first time."

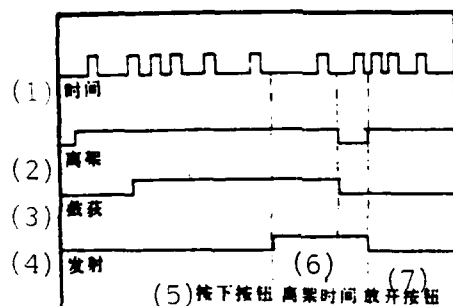


Fig. 4. Proceeding record of guided missile launch.
Key: (1) Time; (2) Release; (3) Interception; (4) Launch; (5) Press button; (6) Missile release time; (7) Release button.

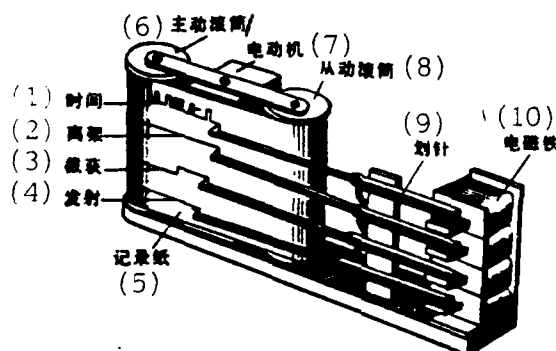


Fig. 5. Automatic recorder
Key: (1) Time; (2) Release; (3) Interception; (4) Launch; (5) Recording sheet; (6) Driver Roller; (7) Motor; (8) Driver roller; (9) Sliding needle; (10) electric magnet.

Actually, I would still be very happy even if Instructor Du had not consoled me, since I had walked away with first hand information.

Heading by: Hou Jie

Figures by: Bai Ping

DISTRIBUTION LIST
DISTRIBUTION DIRECT TO RECIPIENT

<u>ORGANIZATION</u>	<u>MICROFICHE</u>
A205 DMAHTC	1
A210 DMAAC	1
B344 DIA/RTS-2C	9
C043 USAMIA	1
C500 TRADOC	1
C509 BALLISTIC RES LAB	1
C510 R&T LABS/AVRADCOM	1
C513 ARADCOM	1
C535 AVRADCOM/TSARCOM	1
C539 TRASANA	1
C591 FSTC	4
C619 MIA REDSTONE	1
D008 NISC	1
E053 HQ USAF/INET	1
E404 AEDC/DOF	1
E408 AFWL	1
E410 AD/IND	1
E429 SD/IND	1
P005 DOE/ISA/DDI	1
P050 CIA/OCR/ADD/SD	2
AFIT/LDE	1
FTD	
CCV	1
NIA/PHS	1
LLNL/Code L-389	1
NASA/NST-44	1
NSA/1213/TDL	2
ASD/FTD/TQLA	1

END

11-86

DTIC